



Attorney Docket No. 0756-7227

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Shunpei YAMAZAKI et al.

Serial No. 10/733,352

Filed: December 12, 2003

For: PROCESS FOR PRODUCING A
PHOTOELECTRIC CONVERSION
DEVICE

) Group Art Unit: 2812

) Examiner: S. Isaac

) CERTIFICATE OF MAILING

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09-16-04

) Adelle M. Stamps

RESPONSE

Honorable Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The Official Action mailed April 16, 2004, has been received and its contents carefully noted. Filed concurrently herewith is a *Request for Two Month Extension of Time*, which extends the shortened statutory period for response to September 16, 2004. Accordingly, the Applicants respectfully submit that this response is being timely filed.

The Applicants note with appreciation the consideration of the Information Disclosure Statement filed on December 12, 2003.

Claims 1-40 are pending in the present application, of which claims 1, 10, 22 and 30 are independent. The Applicants note with appreciation the allowance of claims 10-21 and 30-40 (page 4, Paper No. 0404). For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Paragraph 3 of the Official Action rejects claims 1-9 and 22-29 as obvious based on the combination of U.S. Patent No. 6,337,259 to Ueda et al. and U.S. Patent No.

6,436,745 to Gotou et al. The Applicants respectfully traverse the rejection because the Official Action has not made a *prima facie* case of obviousness.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims. Independent claims 1 and 22 recite a process for producing a semiconductor device comprising forming a second semiconductor film containing a rare gas element over a first semiconductor film having a crystal structure, and conducting a second heat treatment to segregate the element for promoting crystallization into the second semiconductor film. Ueda and Gotou, either alone or in combination, do not teach or suggest at least the above-referenced features of the present invention.

The Official Action concedes that "Ueda fails [to teach] the process of forming a second semiconductor film (formed by sputtering and/or CVD) containing a rare gas

element over the first semiconductor film having the crystal structure; conducting a second heat treatment to segregate the element for promoting crystallization into the second semiconductor film; and removing the second semiconductor film" (page 2, Paper No. 0404). The Official Action asserts that "Gotou teaches the above process" (pages 2-3, Id.). The Applicants respectfully disagree and traverse the above assertion in the Official Action.

The First Example in Ueda appears to teach that a phosphorus is ion implanted into a region 28 (column 13, line 64). The First Embodiment in Ueda appears to teach the following at column 10, lines 2-12:

[P]hosphorus as an element which is easily combinable with the metallic element is implanted by ion implantation to the surface of the crystalline silicon film ... Next, a second heating process is performed in a non-oxidative atmosphere containing inert gas such as nitrogen, hydrogen, Ar, He, etc., by which the metallic element is gettered into the region of the crystalline silicon film where phosphorus has been implanted. One kind of element or a plurality of kinds of elements among nitrogen, arsenic, antimony and bismuth may also be implanted instead of phosphorus.

However, phosphorus, nitrogen, arsenic, antimony and bismuth are not rare gas elements. Therefore, Ueda does not teach or suggest forming a second semiconductor film containing a rare gas element over a first semiconductor film having a crystal structure, and conducting a second heat treatment to segregate the element for promoting crystallization into the second semiconductor film.

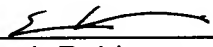
Gotou does not cure the above-referenced deficiencies in Ueda. Gotou appears to teach "forming a second silicon film containing a group V element [such as phosphorus] directly on an entire surface of a first silicon film" (column 2, lines 17-18). Further, Gotou appears to teach "subjecting the first silicon film and the second silicon film to a heat treatment to thereby getter the catalytic metal element from the first silicon film to the second silicon film" (column 2, lines 19-21). However, a group V element is not a rare gas element. Therefore, Ueda and Gotou, either alone or in combination, do not teach or suggest forming a second semiconductor film containing a rare gas element over a first semiconductor film having a crystal structure, and conducting a

second heat treatment to segregate the element for promoting crystallization into the second semiconductor film.

Since Ueda and Gotou do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

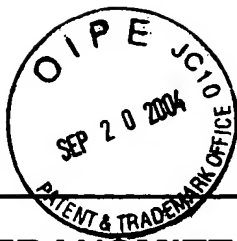
Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



Eric J. Robinson
Reg. No. 38,285

Robinson Intellectual Property Law Office, P.C.
PMB 955
21010 Southbank Street
Potomac Falls, Virginia 20165
(571) 434-6789



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**TRANSMITTAL
FORM**

(to be used for all correspondence after initial filing)

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| TRANSMITTAL FORM (to be used for all correspondence after initial filing) | Application Number | 10/733,352 |
| | Filing Date | December 12, 2003 |
| | First Named Inventor | Shunpei YAMAZAKI et al. |
| | Group Art Unit | 2812 |
| | Examiner Name | S. Isaac |
| Total Number of Pages in This Submission | Attorney Docket Number | 0756-7227 |

ENCLOSURES (check all that apply)

| | | |
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| | |
|--------------------------------|--|
| Firm or Individual name | Eric J. Robinson, Reg. No. 38,285 Robinson Intellectual Property Law Office, P.C. PMB 955 21010 Southbank Street Potomac Falls, VA 20165 |
| Signature | |
| Date | 9-16-04 |

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